QUIZ NAVIGATION

1 2 3 4 5
6 7 8 9 10

Show one page at a time

Finish review

| | |
|---|---|
| Started on | Friday, 11 October 2024, 6:16 PM |
| State | Finished |
| Completed on | Friday, 11 October 2024, 6:23 PM |
| Time taken | 6 mins 53 secs |
| Grade | **6.00** out of 10.00 (**60%**) |

**Question 1**

ID: 50224

Correct

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**THE NEXT 8 QUESTIONS INCLUSIVE REFER TO THE FOLLOWING CASE:**

**TJ is a 63-year-old female who is presenting to your clinic with her grandson. Her grandson reports that TJ complains of memory loss, losing her keys and glasses frequently, as well as struggling to write cheques and maintain her finances. He explains that in the last five or so years, TJ has been rather sedentary and has gained about 50 lbs (BMI = 32 kg/m$^2$). TJ's past medical history is significant for peptic ulcer disease, atrial fibrillation, and hypertension. Her medications include:**

- **Lansoprazole 30 mg PO daily**
- **Candesartan 16 mg PO daily**
- **Apixaban 5 mg PO BID**
- **Diltiazem 120 mg PO daily**

## Laboratory Parameters

| Parameter | Value |
|---|---|
| Blood pressure | 128/84 mmHg |
| Pulse | 64 bpm |
| HbA1C | 6.9 % |
| TSH | 12.67mU/L **(0.4-5.0 mU/L)** |
| B12 | 486 pg/mL (160-950 pg/mL) |
| ALT | 30 IU/L (4-36 IU/L) |
| AST | 21 IU/L (8-33IU/L) |

**Based on her symptoms TJ is diagnosed with dementia and her physician is considering starting her on a cholinesterase inhibitor.**

Cholinesterase inhibitors can be used in the treatment of all of the following subtypes of dementia **EXCEPT**:

Select one:

- Alzheimer's disease (AD) ✖
- Mixed vascular dementia (VD) ✖
- Lewy body dementia (LBD) ✖
- Frontotemporal dementia (FTD) ✔

*Rose Wang (ID:113212) this answer is correct. Cholinesterase inhibitors should not be used in the treatment of frontotemporal dementia (FTD) because they may worsen behavioural symptoms, specifically agitation.*

Rose Wang ID:113212

**Correct**

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's disease treatments

**LEARNING OBJECTIVE:**

Understand the treatment options for different subtypes of dementia.

**BACKGROUND:**

The management of dementia slightly differs between each subtype of dementia. The different subtypes of dementia include Alzheimer's disease (AD), vascular dementia (VD), Lewy body dementia (LBD)/Parkinson's disease dementia (PDD), and frontotemporal dementia (FTD). Cholinesterase inhibitors are considered first line for the treatment of AD. All cholinesterase inhibitors are equally effective for mild to moderate AD; selection is dependent on cost, route of administration, and/or convenience. Based on the available evidence, donepezil is the only cholinesterase inhibitor in the class that is indicated for all severities of AD, whereas rivastigmine and galantamine are reserved for patients with mild to moderate AD. In VD, there is no clear medication to use. Cholinesterase inhibitors are mainly used for patients who present with mixed VD with either AD, PD, or LBD. For prevention of pure VD, treating modifiable cardiovascular risk factors that can increase the VD risk should be considered. For patients with LBD, donepezil or rivastigmine may be used depending on patient preference (e.g. dose frequency and route of administration). Cholinesterase inhibitors are less likely to help with cognition in LBD but may help with hallucinations. Galantamine is reserved for patients who do not tolerate the other cholinesterase inhibitors (e.g. rashes secondary to rivastigmine patch or severe nausea with donepezil) due to its limited evidence in this type of dementia. Procholinergic agents (cholinesterase inhibitors) can theoretically exacerbate features of Parkinson's disease, such as increasing the incidence of tremors. Thus, it is important to assess the risks and benefits of cholinesterase inhibitor therapy

in this population. Patients with dyskinesia or tremors due to their PD may not have the dexterity to put on rivastigmine patches or open their pill bottles. Data is limited for the pharmacological treatment of FTD. Patients who are diagnosed with FTD should not take a cholinesterase inhibitor as they may worsen behavioural symptoms of FTD, specifically agitation.

**RATIONALE:**

**Correct Answer:**

- **Frontotemporal dementia (FTD)** - Cholinesterase inhibitors should not be used in the treatment of frontotemporal dementia (FTD) because they may worsen behavioural symptoms, specifically agitation.

**Incorrect Answers:**

- **Alzheimer's disease (AD)** - Cholinesterase inhibitors are used first line in the treatment of Alzheimer's disease (AD).
- **Mixed vascular dementia (VD)** - Cholinesterase inhibitors can be used in the treatment of mixed vascular dementia (VD) with either Alzheimer's disease (AD), Parkinson's disease (PD), or Lewy body dementia (LBD).
- **Lewy body dementia (LBD)** - Cholinesterase inhibitors can be used in the treatment of Lewy body dementia (LBD) to help with hallucinations.

**TAKEAWAY/KEY POINTS:**

Cholinesterase inhibitors can be used for the treatment of Alzheimer's disease (AD), mixed vascular dementia (VD), and Lewy body dementia (LBD) but should not be used for the treatment of frontotemporal dementia (FTD).

**REFERENCE:**

[1] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

The correct answer is: Frontotemporal dementia (FTD)

**Question 2**

ID: 50227

Incorrect

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Which of the following is **NOT** a risk factor that TJ has for the development of AD?

Select one:

- Hypertension ✖
- Obesity ✖

*Rose Wang (ID:113212) this answer is incorrect. TJ's obesity is a risk factor for developing AD.*

- Age ✔
- Gender ✖

Rose Wang ID: 113212

**Incorrect**

Marks for this submission: 0.00/1.00.

**TOPIC:** Alzheimer's disease

**LEARNING OBJECTIVE:**

Identify the risk factors for the development of AD.

**BACKGROUND:**

Dementia is a syndrome of acquired cognitive function impairment that is sufficient to interfere with normal activities. Dementias are usually progressive and chronic and treatment varies depending on the stage of the illness. The most common causes of dementia are Alzheimer's disease (AD), vascular dementia (VD), and Lewy body dementia (LBD). Alzheimer's disease often begins with cognitive decline and progresses to motor impairments. In AD, there is a combination of protein clumps and cellular material deposits that cause a decrease in acetylcholine and an increase in glutamate. AD can be classified as mild, moderate, or severe:

Mild: Memory loss, losing possessions, and difficulty with finances
Moderate: getting lost, anxiety, depression, forgetting personal history
Severe: Agitation, aggression, hallucinations, delusions, sleep disturbances

Symptoms of AD include:

Memory loss
Aphasia (impairment of language ability)
Disorientation
Agnosia (inability to recognize things/people)
Apraxia (unable to perform a task/movement when instructed even though the patient understands and wants to do said task)
Depression
Hallucination
Delusions
Aggression
Wandering
Uncooperativeness
Inability to care for self

Risk factors for the development of AD include:

Age over 65

Age over 65
Family history
Genetics
Gender (females > males)
Atrial fibrillation
Hypertension
CHD
Diabetes
Obesity
Smoking
Head trauma
Lower education
Depression
Alcohol use
Physical inactivity
Social isolation

There is some evidence to state that increased physical activity, blood pressure control, and cognitive training may help to prevent AD. Before confirming the diagnosis of AD and proceeding with treatment, it is important to rule out potentially reversible causes of cognitive impairment. This includes medications (i.e. antiemetics, antipsychotics, anticholinergics, tricyclic antidepressants, and antimuscarinics), vitamin $B_{12}$ deficiency, hypothyroidism, and depression.

**RATIONALE:**

**Correct Answer:**

- **Age** - Age over 65 is a listed risk factor, but TJ is only 63, making age not applicable in her case.

**Incorrect Answers:**

- **Hypertension** - Hypertension is indeed a risk factor for AD.
- **Obesity** - Obesity is listed as a risk factor for developing AD.
- **Gender** - Gender is a noted risk factor, with females being at higher risk.

**TAKEAWAY/KEY POINTS:**

Risk factors for the development of AD include age over 65, family history, genetics, gender (females > males), atrial fibrillation, hypertension, CHD, diabetes, obesity, smoking, head trauma, lower education, depression, alcohol use, physical inactivity, and social isolation.

**REFERENCE:**

[1] Aricept. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.
[2] Ebixa. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.
[3] De Gage SB et al. Benzodiazepine use and risk of dementia: prospective population-based study. BMJ. 2012;345. http://www.bmj.com/content/345/bmj.e6231.pdf%2Bhtml.
[4] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

The correct answer is: Age

**Question 3**

ID: 55869

Correct

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What is the most likely contributing factor that is potentially worsening TJ's cognitive impairment?

Select one:

- Lansoprazole use ✖
- Low B12 level ✖
- Depression ✖
- New diagnosis of hypothyroidism ✔

*Rose Wang (ID:113212) this answer is correct. TJ's TSH is high indicating hypothyroidism which could be causing her cognitive impairment.*

Rose Wang ID:113212

**Correct**

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's Disease

**LEARNING OBJECTIVE:**

Recognize the reversible causes of cognitive impairment.

**BACKGROUND:**

Dementia is a syndrome of acquired cognitive function impairment that is sufficient to interfere with normal activities. Dementias are usually progressive and chronic and treatment varies depending on the stage of the illness. The most common causes of dementia are Alzheimer's disease (AD), vascular dementia (VD), and Lewy body dementia (LBD). Alzheimer's disease often begins with cognitive decline and progresses to motor impairments. In AD, there is a combination of protein clumps and cellular material deposits that cause a decrease in acetylcholine and an increase in glutamate. AD can be classified as mild, moderate, or severe:

- **Mild**: Memory loss, losing possessions, and difficulty with finances
- **Moderate**: getting lost, anxiety, depression, forgetting personal history

- **Severe**: Agitation, aggression, hallucinations, delusions, sleep disturbances

Symptoms of AD include:

- Memory loss
- Aphasia (impairment of language ability)
- Disorientation
- Agnosia (inability to recognize things/people)
- Apraxia (unable to perform a task/movement when instructed even though the patient understands and wants to do said task)
- Depression
- Hallucination
- Delusions
- Aggression
- Wandering
- Uncooperativeness
- Inability to care for self

Risk factors for the development of AD include:

- Age over 65
- Family history
- Genetics
- Gender (females > males)
- Atrial fibrillation
- Hypertension
- CHD
- Diabetes
- Obesity
- Smoking
- Head trauma
- Lower education
- Depression
- Alcohol use
- Physical inactivity
- Social isolation

There is some evidence to state that increased physical activity, blood pressure control, and cognitive training may help to prevent AD. Before confirming the diagnosis of AD and proceeding with treatment, it is important to rule out potentially reversible causes of cognitive impairment. This includes medications (i.e., antiemetics, antipsychotics, anticholinergics, tricyclic antidepressants, and antimuscarinics), vitamin $B_{12}$ deficiency, hypothyroidism, and depression.

**RATIONALE:**

***Correct Answer:***

- **New diagnosis of hypothyroidism** - TJ's TSH is high indicating hypothyroidism which could be causing her cognitive impairment.

***Incorrect Answers:***

- **Lansoprazole use** - Lansoprazole is not a medication that has been conclusively linked to causing cognitive impairment.
- **Low B12 level** - TJ's B12 level is normal and so unlikely to be causing cognitive impairment.
- **Depression** - There is no indication that TJ has depression and so it is unlikely that depression is causing cognitive impairment.

**TAKEAWAY/KEY POINTS:**

Before confirming the diagnosis of AD and proceeding with treatment, it is important to rule out potentially reversible causes of cognitive impairment. This includes medications (i.e., antiemetics, antipsychotics

anticholinergics, tricyclic antidepressants, and antimuscarinics), vitamin $B_{12}$ deficiency, hypothyroidism, and depression.

**REFERENCE:**

[1] Aricept. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

[2] Ebixa. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

[3] De Gage SB et al. Benzodiazepine use and risk of dementia: prospective population-based study. BMJ. 2012;345. http://www.bmj.com/content/345/bmj.e6231.pdf+html.

[4] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

The correct answer is: New diagnosis of hypothyroidism

**Question 4**

ID: 55870

Incorrect

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**Eight weeks later, TJ's TSH has normalized on levothyroxine; however, her symptoms of cognitive impairment are still present. TJ's physician decides to start her on donepezil.**

Which of the following is an appropriate counselling point for TJ?

Select one:

- Donepezil must be taken on an empty stomach ✖
  *Rose Wang (ID:113212) this answer is incorrect. Donepezil can be taken with or without food, however, with food is recommended to improve tolerability.*
- The donepezil dose may be titrated up in 4 weeks ✔
- Donepezil is best taken in the evening with supper ✖
- Donepezil should help resolve TJ's dementia since it was initiated early ✖

Rose Wang ID:113212

**Incorrect**

Marks for this submission: 0.00/1.00.

**TOPIC:** Alzheimer's Disease

**LEARNING OBJECTIVE:**

Understand patient counselling points for donepezil.

**BACKGROUND:**

Dementia is a syndrome of acquired cognitive function impairment that is sufficient to interfere with normal activities. Dementias are usually progressive and chronic and treatment varies depending on the stage of the illness. The most common causes of dementia are Alzheimer's disease (AD), vascular dementia (VD), and Lewy body dementia (LBD). Alzheimer's disease often begins with cognitive decline and progresses to motor impairments. In AD, there is a combination of protein clumps and cellular material deposits that cause a decrease in acetylcholine and an increase in glutamate.

Pharmacological treatment options:

There are currently no curative treatments available for dementia. Current treatments work by slowing the progression of symptoms. The majority of dementia cases have more than one condition contributing to causation. The management of cognitive and functional symptoms should be based on those diagnoses that are believed to be the predominant contributing causes. The mainstay treatment usually includes the use of cholinesterase inhibitors (i.e. donepezil, rivastigmine, or galantamine) or NMDA antagonists (i.e. memantine). All three cholinesterase inhibitors have demonstrated equal efficacy for mild to moderate AD with donepezil being the only one showing good efficacy in mild-severe dementia. They are also recommended as a treatment option for LBD and AD that has a vascular component. Memantine may be used if there is an intolerance for cholinesterase inhibitors or as an adjunct therapy, and can be used in combination with cholinesterase inhibitors. There is no evidence to support the use of herbal medications in the treatment of AD.

**RATIONALE:**

***Correct Answer:***

- **The donepezil dose may be titrated up in 4 weeks** - This is true. Low dose donepezil should be started and the dose can be titrated up in 4 weeks.

***Incorrect Answers:***

- **Donepezil must be taken on an empty stomach** - Donepezil can be taken with or without food, however, with food is recommended to improve tolerability.
- **Donepezil is best taken in the evening with supper** - Donepezil should be taken in the morning to prevent vivid dreams/insomnia.
- **Donepezil should help resolve TJ's dementia since it was initiated early** - There are no medications that can cure AD. The medications can simply slow down the progression of the disease.

**TAKEAWAY/KEY POINTS:**

There are currently no curative treatments available for dementia. Current treatments work by slowing the

progression of symptoms. Donepezil can be taken with or without food, however, with food is recommended to improve tolerability. Donepezil is also recommended to be taken in the morning to prevent vivid dreams/insomnia.

**REFERENCE:**

[1] Aricept. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

[2] Ebixa. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

[3] De Gage SB et al. Benzodiazepine use and risk of dementia: prospective population-based study. BMJ. 2012;345. http://www.bmj.com/content/345/bmj.e6231.pdf%2Bhtml.

[4] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

The correct answer is: The donepezil dose may be titrated up in 4 weeks

**Question 5**

ID: 50241

Correct

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**Two weeks after starting donepezil, TJ's physician decides to increase the dose from 5 mg to 10 mg PO daily in the morning. You receive a call from TJ's grandson saying that his grandmother has been complaining of nausea ever since the dose was increased. He asks you whether you have any suggestions to help minimize TJ's nausea.**

All of the following are appropriate recommendations to make for TJ at this time **EXCEPT**:

Select one:

- Decrease the dose of donepezil ✖
- Take donepezil with a meal at breakfast ✖
- Advise TJ to have smaller, more frequent meals during the day and to stay hydrated ✖
- Take dimenhydrinate when needed for nausea ✔

*Rose Wang (ID:113212) this answer is correct. Dimenhydrinate has anticholinergic properties that may diminish the therapeutic effects of cholinesterase inhibitors and vice versa.*

Rose Wang ID: 113212

Correct

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's Disease

**LEARNING OBJECTIVE:**

Understand how to manage nausea secondary to cholinesterase inhibitor use.

**BACKGROUND:**

Donepezil is a cholinesterase inhibitor that is indicated for use in mild to severe AD to stabilize and preserve cognitive function. Donepezil works by increasing acetylcholine levels in the brain, which we know there is an imbalance of in AD. It takes 3-6 months to show efficacy. It is important to note that efficacy in AD doesn't necessarily mean an improvement in cognition, but rather efficacy means slowing the progression/stabilizing cognitive decline. If a patient's cognitive function has not worsened while on the drug, this would mean the drug is working.
If the patient is not experiencing adverse effects and their cognitive function has improved or remained stable, we can start to titrate up the dose as tolerated. The target dose of donepezil is 10 mg PO daily and the dose may be titrated up every 4 weeks. The reason for slow titration is to minimize side effects that the patient may experience, including nausea, vomiting, diarrhea, fatigue, sleep disturbances, increased urinary frequency, headache, anorexia/weight loss, bradycardia, and syncope. Note that patients are at risk for withdrawal symptoms secondary to abrupt discontinuation of cholinesterase inhibitor therapy and must be slowly tapered off the medication as well.
If patients experience nausea, they may try starting at the lowest dose for longer intervals before titrating up or taking the medication with meals. Having smaller, more frequent meals during the day and maintaining adequate hydration can help symptoms of nausea. If nausea persists despite management strategies, then patients may either switch to another cholinesterase inhibitor and/or formulation (e.g. rivastigmine transdermal patch) or discontinue from the class entirely (since nausea is a class effect of cholinesterase inhibitors). Dimenhydrinate should be avoided for nausea in patients taking cholinesterase inhibitors because of opposing mechanisms of action. Dimenhydrinate has anticholinergic properties that can reduce the therapeutic effect of cholinesterase inhibitors and vice versa.

**RATIONALE:**

**Correct Answer:**

- **Take dimenhydrinate when needed for nausea** - Dimenhydrinate has anticholinergic properties that may diminish the therapeutic effects of cholinesterase inhibitors and vice versa.

**Incorrect Answers:**

- **Decrease the dose of donepezil** - Donepezil should be slowly titrated every 4 weeks to help minimize nausea.
- **Advise TJ to have smaller, more frequent meals during the day and to stay hydrated** - Taking donepezil with meals may help minimize nausea.
- **Take dimenhydrinate when needed for nausea** - Having smaller, more frequent meals during the

day and maintaining adequate hydration can help symptoms of nausea.

**TAKEAWAY/KEY POINTS:**

If patients experience nausea, they may try starting at the lowest dose for longer intervals before titrating up or taking the medication with meals. Having smaller, more frequent meals during the day and maintaining adequate hydration can help symptoms of nausea. If nausea persists despite management strategies, then patients may either switch to another cholinesterase inhibitor and/or formulation (e.g. rivastigmine transdermal patch) or discontinue from the class entirely (since nausea is a class effect of cholinesterase inhibitors). Dimenhydrinate should be avoided for nausea in patients taking cholinesterase inhibitors because of opposing mechanisms of action.

**REFERENCE:**

[1] Aricept. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.
[2] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

The correct answer is: Take dimenhydrinate when needed for nausea

**Question 6**

ID: 50244

Incorrect

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Which of the following is a drug interaction TJ should be counselled on once she starts donepezil?

Select one:

- Donepezil may decrease the clearance of apixaban ✖
- Lansoprazole can inhibit the metabolism of donepezil ✖

*Rose Wang (ID:113212) this answer is incorrect. Lansoprazole does not induce or inhibit CYP 3A4 or CYP 2D6.*

- Diltiazem can enhance bradycardia when given with donepezil ✔
- Donepezil can induce the metabolism of lansoprazole ✖

Rose Wang ID: 113212

**Incorrect**

Marks for this submission: 0.00/1.00.

**TOPIC:** Alzheimer's Disease

**LEARNING OBJECTIVE:**

Recognize drug interactions with donepezil.

**BACKGROUND:**

It is important to monitor for efficacy and safety whenever starting a new drug, especially when the patient is on other medications or has comorbidities. Donepezil is a major substrate of CYP 3A4 and a minor substrate of CYP 2D6. Common side effects of donepezil include nausea/vomiting, syncope/bradycardia, GI bleeding, seizures, sleep disturbances and diarrhea. Heart rate (HR) and signs of syncope are important to monitor in patients on other medications which can cause bradycardia or arrhythmias (e.g. beta-blockers, non-dihydropyridine calcium channel blockers), or a lowering of blood pressure (e.g. ACE inhibitors). GI bleeding can occur and this is the reason why the drug is started at a low dose to minimize this side effect. This should be monitored especially with patients on other drugs which can cause bleeds or if there is a history of peptic ulcers present.

**RATIONALE:**

**Correct Answer:**

- **Diltiazem can enhance bradycardia when given with donepezil** - Diltiazem and donepezil can both cause bradycardia. When used together the effects can be additive.

**Incorrect Answers:**

- **Donepezil may decrease the clearance of apixaban** - Donepezil does not affect the clearance of medications.
- **Lansoprazole can inhibit the metabolism of donepezil** - Lansoprazole does not induce or inhibit CYP 3A4 or CYP 2D6.
- **Donepezil can induce the metabolism of lansoprazole** - Donepezil does not induce CYP enzymes.

**TAKEAWAY/KEY POINTS:**

Donepezil can cause bradycardia and when used in combination with another bradycardic agent such as diltiazem, the bradycardia can be enhanced. Therefore, it is important to exercise caution when using cholinesterase inhibitors together with beta-blockers or non-dihydropyridine calcium channel blockers (e.g. verapamil, diltiazem).

**REFERENCE:**

[1] Malone DM, Lindesay J. Cholinesterase inhibitors and cardiovascular disease: a survey of old age psychiatrists' practice. *Age Ageing*. 2007;36(3):331-333. doi:10.1093/ageing/afm002.http://ageing.oxfordjournals.org/content/36/3/331.full. [2] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

The correct answer is: Diltiazem can enhance bradycardia when given with donepezil

**Question 7**

ID: 50254

Correct

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**Three months after starting donepezil, TJ's physician calls you to discuss her case and ask for your opinion. TJ has been showing a depressed mood and has lost all interest in activities that she used to find pleasurable. She almost never feels hungry anymore and she sleeps for the majority of the day. She displays low self-esteem and has been having difficulties concentrating. Her physician has tried non-pharmacological treatment strategies which have not been successful. He would like to initiate her on antidepressant therapy and wants to know which agent to prescribe.**

Which of the following antidepressants is the most appropriate agent to initiate TJ on at this time?

Select one:

- Sertraline ✔ *Rose Wang (ID:113212) this answer is correct. Selective serotonin reuptake inhibitors (SSRI) (sertraline and citalopram) are the preferred antidepressants in patients with dementia.*
- Paroxetine ✖
- Nortriptyline ✖
- Antidepressants should not be used in patients with dementia ✖

Rose Wang ID:113212

**Correct**

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's Disease management

**LEARNING OBJECTIVE:**

Understand the management of comorbid depression with dementia.

**BACKGROUND:**

Dementia and depression frequently occur together in the aging population. Depression can be a psychological reaction to cognitive decline, thus the two conditions tend to co-exist frequently. There is insufficient evidence for or against the use of antidepressants in this patient population. If antidepressants are used, selective serotonin reuptake inhibitors (SSRI) are preferred over tricyclic antidepressants (TCA) due to favourable side effect profiles (i.e. less anticholinergic side effects and less orthostatic hypotension). Sertraline and citalopram are preferred over more anticholinergic SSRIs such as paroxetine. However, some SSRIs (escitalopram, citalopram) can also cause prolonged QTc intervals, so caution is advised in those with risk factors. If a TCA must be used, desipramine or nortriptyline are preferred because they have fewer anticholinergic effects compared to other TCAs. An adequate trial with antidepressants in patients with dementia for 2-3 months would be sufficient to assess medication efficacy. Behaviours improve faster than mood (usually around 2-4 weeks into therapy).

**RATIONALE:**

**Correct Answer:**

- **Sertraline** - Selective serotonin reuptake inhibitors (SSRI) (sertraline and citalopram) are the preferred antidepressants in patients with dementia.

**Incorrect Answers:**

- **Paroxetine** - While selective serotonin reuptake inhibitors (SSRI) are the preferred antidepressants in patients with dementia, paroxetine has a high risk of anticholinergic side effects compared to sertraline and citalopram and so it should be avoided.
- **Nortriptyline** - Selective serotonin reuptake inhibitors (SSRI) are preferred over tricyclic antidepressants (TCA) in patients with dementia because of reduced anticholinergic side effects and orthostatic hypotension.
- **Antidepressants should not be used in patients with dementia** - Although there is insufficient evidence for or against the use of selective antidepressants in the dementia population, they can be used cautiously.

**TAKEAWAY/KEY POINTS:**

There is insufficient evidence for or against the use of antidepressants in this patient population. If antidepressants are used, selective serotonin reuptake inhibitors (SSRI) are preferred over tricyclic antidepressants (TCA) due to favourable side effect profiles (i.e. less anticholinergic side effects and less orthostatic hypotension). Sertraline and citalopram are preferred over more anticholinergic SSRIs such as paroxetine.

**REFERENCE:**

[1] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

The correct answer is: Sertraline

**Question 8**

ID: 50255

Correct

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**Five years later, TJ's symptoms have progressed significantly to severe dementia and she is no longer fully adherent to her medications.**

What is the most appropriate next step in regards to TJ's donepezil?

Select one:

- Increase the donepezil dose so that TJ gets more donepezil when she does take it ✖
- Stop the donepezil since TJ's AD progression has been significant ✖
- Have TJ's donepezil blister packed to help with adherence ✖
- Taper off donepezil since TJ's AD progression has been significant ✔

*Rose Wang (ID:113212) this answer is correct. Stopping TJ's donepezil is appropriate given her progression and non-compliance. Donepezil should be tapered off instead of abruptly stopped.*

Rose Wang 113212

**Correct**

Marks for this submission: 1.00/1.00.

**TOPIC:** Prescription Calculations

**LEARNING OBJECTIVE:**

Recognize when deprescribing medication for Alzheimer's Disease is appropriate.

**BACKGROUND:**

As current therapy is not curative for dementia, the progression of the disease is expected. Eventually, the side effects and drug costs of continuing therapy outweigh the benefits and clinicians need to recognize when discontinuation of cholinesterase inhibitors is appropriate. Abrupt discontinuation of cholinesterase inhibitors/memantine used to treat Alzheimer's disease (AD) may lead to withdrawal symptoms such as hallucinations, delusions, insomnia, increased agitation or anxiety. Doses should be tapered by 50% every 4 weeks to the lowest dose. After 4 weeks of treatment on the lowest dose, the medication can be discontinued. The criteria to discontinue the cholinesterase inhibitor and memantine in patients treated for Alzheimer's disease (AD), vascular dementia (VD), Lewy body dementia (LBD), or Parkinson's disease dementia (PDD) for over 12 months is at least one of the following:

- Clinically meaningful worsening of dementia reflected over the past 6 months in the absence of other medical conditions or environmental factors
- The patient is nonadherent and continued prescribing is without merit
- The rate of cognitive, functional, or behavioural decline is greater on treatment compared with that before being treated
- The patient experiences intolerable side effects that are potentially related to the therapy
- The comorbidities of the patient make continued use of the agent unacceptably risky or futile
- The patient's dementia progresses to a stage where there would be no meaningful benefit from continued therapy (e.g. severe or terminal dementia)

Cholinesterase inhibitors and memantine should be discontinued in patients with mild cognitive impairment (MCI), frontotemporal dementia (FTD), and other neurodegenerative diseases (e.g. Huntington's disease and spinal muscular atrophy). Patients should continue their cholinesterase inhibitor if they currently have meaningful psychotic symptoms, agitation, or aggression until these behavioural symptoms have stabilized. Discontinue the medication if these behavioural symptoms are worsened by the initiation or dose increase of the cholinesterase inhibitor. If significant deterioration occurs within 1-3 months of discontinuation, then restart the cholinesterase inhibitor at a low dose and titrate back up to the last effective and tolerated dose.

**RATIONALE:**

**Correct Answer:**

- **Taper off donepezil since TJ's AD progression has been significant** - Stopping TJ's donepezil is appropriate given her progression and non-compliance. Donepezil should be tapered off instead of abruptly stopped.

**Incorrect Answers:**

- **Increase the donepezil dose so that TJ gets more donepezil when she does take it** - Since TJ's AD has progressed and she is no longer compliant, TJ meets the criteria for stopping her donepezil.
- **Stop the donepezil since TJ's AD progression has been significant** - Stopping TJ's donepezil is appropriate given her progression and non-compliance; however, donepezil should be tapered off instead of abruptly stopped.
- **Have TJ's donepezil blister packed to help with adherence** - Given TJ's AD progression, she meets the criteria to have her donepezil stopped.

**TAKEAWAY/KEY POINTS:**

As current therapy is not curative for dementia, progression of the disease is expected. Eventually, the side effects and drug costs of continuing therapy outweigh the benefits and clinicians need to recognize when discontinuation of cholinesterase inhibitors is appropriate. When discontinuing therapy for dementia, the medications should be tapered off instead of abruptly stopped to prevent withdrawal symptoms.

**REFERENCE:**

[1] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

The correct answer is: Taper off donepezil since TJ's AD progression has been significant

**Question 9**

**SD and his son come in for their appointment at your pharmacy clinic. SD is a 75-year-old male who**

ID: 50257

Correct

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**had been diagnosed with Alzheimer's disease (AD) 5 years ago and has been taking donepezil since then. SD and his son have been very happy with the limited progression of SD's AD while on donepezil. He has not reported any adverse effects secondary to the treatment. SD's son informs you that his dad is now having a very hard time swallowing pills and liquids and they are wondering what to do about his donepezil.**

What is the most appropriate recommendation for SD and his son?

Select one:

- Have SD's son crush the donepezil so SD can swallow it more easily ✖
- Stop SD's donepezil since he has been on it for 5 years ✖
- Switch SD to an available patch formulation of donepezil (when approved) or rivastigmine ✔

*Rose Wang (ID:113212) this answer is correct. Switching SD to a patch is the most appropriate option. The donepezil patch will likely be on the Canadian market soon, in the meantime SD should be switched to the rivastigmine patch to continue his treatment for AD.*

- Switch SD to crushable galantamine ✖

**Correct**

Marks for this submission: 1.00/1.00.

**TOPIC:** Alzheimer's Disease

**LEARNING OBJECTIVE:**

Identify the different pharmacological treatment options for AD.

**BACKGROUND:**

Pharmacological treatment options: There are currently no curative treatments available for dementia. Current treatments work by slowing the progression of symptoms. The majority of dementia cases have more than one condition contributing to causation. The management of cognitive and functional symptoms should be based on those diagnoses that are believed to be the predominant contributing causes. The mainstay treatment usually includes the use of cholinesterase inhibitors (i.e. donepezil, rivastigmine, or galantamine) or NMDA antagonists (i.e. memantine). All three cholinesterase inhibitors have demonstrated equal efficacy for mild to severe AD. They are also recommended as a treatment option for LBD and AD that has a vascular component. Memantine may be used if there is an intolerance for cholinesterase inhibitors or as an adjunct therapy, and can be used in combination with cholinesterase inhibitors. There is no evidence to support the use of herbal medications in the treatment of AD.

**RATIONALE:**

**Correct Answer:**

- **Switch SD to an available patch formulation of donepezil (when approved) or rivastigmine** - Switching SD to a patch is the most appropriate option. The donepezil patch will likely be on the Canadian market soon, in the meantime SD should be switched to the rivastigmine patch to continue his treatment for AD.

**Incorrect Answers:**

- **Have SD's son crush the donepezil so SD can swallow it more easily** - Donepezil should not be crushed. Also, SD is having a hard time swallowing liquids and pills and so crushing the medication is unlikely to make it easier to swallow.
- **Stop SD's donepezil since he has been on it for 5 years** - SD and his son are happy about the minimal progression of SD's AD therefore stopping treatment is not appropriate.
- **Switch SD to crushable galantamine** - Galantamine should not be crushed and therefore switching SD would not be appropriate.

**TAKEAWAY/KEY POINTS:**

Rivastigmine and donepezil are cholinesterase inhibitors that have patches available for those who cannot take oral medications. The donepezil patch is not yet available on the Canadian Market.

**REFERENCE:**

[1] Aricept. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.
[2] Ebixa. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.
[3] De Gage SB et al. Benzodiazepine use and risk of dementia: prospective population-based study. BMJ. 2012;345. http://www.bmj.com/content/345/bmj.e6231.pdf%2Bhtml.
[4] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.

The correct answer is: Switch SD to an available patch formulation of donepezil (when approved) or rivastigmine

**Question 10**

ID: 50258

Incorrect

Flag question

In all of the following patient case scenarios, it would be appropriate to start memantine **EXCEPT** for:

Select one:

- Patient has moderate to severe AD and requires therapy in addition to a cholinesterase inhibitor to ✖

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prevent further decline

- Patient has a contraindication to cholinesterase inhibitors due to a hypersensitivity reaction ✖
- Patient has been stable on a cholinesterase inhibitor for years but is no longer getting benefits from it ✖

*Rose Wang (ID:113212) this answer is incorrect. If a patient has been stable on a cholinesterase inhibitor for years but is no longer getting benefits from it, the addition of memantine is indicated.*

- Patient still has cognitive impairment 3 months after initiating a cholinesterase inhibitor ✔

**Incorrect**

Marks for this submission: 0.00/1.00.

**TOPIC:** Alzheimer's Disease

**LEARNING OBJECTIVE:**

Understand when memantine is indicated in AD.

**BACKGROUND:**

One of our goals of therapy for patients with AD is to preserve and stabilize cognitive function. This is often achieved modestly by drug therapies such as cholinesterase inhibitors and NMDA antagonists.

Donepezil is a cholinesterase inhibitor that is indicated for use in mild to severe AD to stabilize and preserve cognitive function. Donepezil works by increasing acetylcholine levels in the brain, which we know there is an imbalance of in AD. It takes 3-6 months to show efficacy. It is important to note that efficacy in AD doesn't necessarily mean an improvement in cognition, but rather efficacy means slowing the progression/stabilizing cognitive decline. If a patient's cognitive function has not worsened while on the drug, this would mean the drug is working.

If the patient is not experiencing adverse effects and their cognitive function has improved or remained stable, we can start to titrate up the dose as tolerated. The target dose of donepezil is 10 mg PO daily and the dose may be titrated up every 4 weeks. The reason for slow titration is to minimize side effects that the patient may experience, including nausea, vomiting, diarrhea, fatigue, sleep disturbances, increased urinary frequency, headache, anorexia/weight loss, bradycardia, and syncope. Note that patients are at risk for withdrawal symptoms secondary to abrupt discontinuation of cholinesterase inhibitor therapy and must be slowly tapered off the medication as well.

Patients may be switched to another cholinesterase inhibitor within the same class if they experience worsening cognitive decline despite being on a maximally tolerated dose, if they experience intolerable side effects, or if they have trouble with adherence (e.g. cannot swallow tablets). Specifically, if the patient has worsened cognitive impairment within the first year of initiation (at least 6 months) despite being on the maximum dosage, then consider switching to another cholinesterase inhibitor rather than starting combination therapy with memantine. This is because memantine provides little additional benefit to cognition, function (ADLs), behaviour, and mood in moderate to severe AD. Memantine may be started if patients have moderate to severe dementia and require therapy in addition to cholinesterase inhibitors to prevent further decline. Consider combination therapy in those who have been stable on a cholinesterase inhibitor for several years, who are now having a perceived lack of benefit from it. At this point, lack of treatment response is likely due to the natural course of the disease. Memantine may also be started as monotherapy in patients who did not tolerate cholinesterase inhibitor therapy.

**RATIONALE:**

**Correct Answer:**

- **Patient still has cognitive impairment 3 months after initiating a cholinesterase inhibitor** - If a patient still has cognitive impairment within the first year (at least 6 months) of initiating a cholinesterase inhibitor despite being on the maximum dosage, it should be switched to another cholinesterase inhibitor rather than starting combination therapy with memantine.

**Incorrect Answers:**

- **Patient has moderate to severe AD and requires therapy in addition to a cholinesterase inhibitor to prevent further decline** - If a patient has moderate to severe AD and requires therapy in addition to a cholinesterase inhibitor to prevent further decline, memantine is indicated.
- **Patient has a contraindication to cholinesterase inhibitors due to a hypersensitivity reaction** - If a patient has a contraindication to cholinesterase inhibitors and is unable to take them, memantine is indicated.
- **Patient has been stable on a cholinesterase inhibitor for years but is no longer getting benefits from it** - If a patient has been stable on a cholinesterase inhibitor for years but is no longer getting benefits from it, the addition of memantine is indicated.

**TAKEAWAY/KEY POINTS:**

Memantine may be started if a patient has moderate to severe dementia and requires therapy in addition to cholinesterase inhibitors to prevent further decline, if they have been stable on a cholinesterase inhibitor for several years and are now having a lack of benefit from it, or if they did not tolerate cholinesterase inhibitor therapy. It is recommended that patients try a cholinesterase inhibitor for at least 6 months at the maximum tolerated dose prior to it being considered a treatment failure. At that point, they should preferably switch to another cholinesterase inhibitor first rather than starting combination therapy with memantine.

**REFERENCE:**

[1] Aricept. In: Compendium of Pharmaceuticals and Specialties. Ottawa, ON: Canadian Pharmacists Association. https://myrxtx.ca.
[2] Rockwood K and Bosma M. Dementia. In: Compendium of Therapeutic Choices. Ottawa, ON: Canadian

Pharmacists Association. https://myrxtx.ca.

The correct answer is: Patient still has cognitive impairment 3 months after initiating a cholinesterase inhibitor

Finish review

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